# Introduction to the Special Issue Capturing the Dynamics of Emotion and Emotion Regulation in Daily Life With Ambulatory Assessment

Special Issue: Capturing the Dynamics of Emotion and Emotion Regulation in Daily Life With Ambulatory Assessment



# Editorial

# Introduction to the Special Issue

## Capturing the Dynamics of Emotion and Emotion Regulation in Daily Life With Ambulatory Assessment

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In daily life, emotions fluctuate continuously in response to many factors, including appraisals of events, biological rhythms, and self-regulation (Kuppens & Verduyn, 2017). Furthermore, the relations among emotions and these factors are bidirectional, resulting in complex dynamics (Cunningham, Dunfield, & Stillman, 2013; Hollenstein, 2015). For instance, appraising an event as incompatible with one's goals may trigger anger. In turn, this anger may be evaluated as situationally inappropriate prompting regulation efforts. And, if successful, regulation will influence the trajectory of anger over time (Gross, 2015). Thus, emotion *generation* influences emotion *regulation* and vice versa (Yih, Uusberg, Taxer, & Gross, 2019). This presents a formidable challenge for researchers seeking to understand dynamic emotional processes. Addressing this challenge requires valid and reliable measurement and modeling tools, which are still lacking in psychology (Borsboom, 2006; Flake & Fried, 2019) and in emotion research specifically (Brose, Schmiedek, Gerstorf, & Voelkle, 2019; Weidman, Steckler, & Tracy, 2017).

In particular, to capture the dynamics of emotion and emotion regulation in daily life, we need new intensive longitudinal assessment and modeling techniques. Although intensive longitudinal assessment of emotion can be traced back to Flügle's seminal (1925) paper, it only began to flourish in the 1980s when the *experience sampling method* (ESM; Csikszentmihalyi & Larson, 1987), *ecological momentary assessment* (EMA; Stone & Shiffman, 1994), and related *diary methods* (Bolger, Davis, & Rafaeli, 2003) were developed. Advances in handheld computing (e.g., PDAs, smartphones) led to an explosion in daily life research in the 2000s, using what are now collectively referred to as *ambulatory assessment* (AA) methods (Trull & Ebner-Priemer, 2014).[1]

Several previous special issues, including one in this journal (Westmeyer, 2007) have covered AA (e.g., Kubiak & Stone, 2012; Schimmack & Diener, 2003) and its application to diverse subfields, including clinical psychology (Trull & Ebner-Priemer, 2009), addiction (Tomko & McClure, 2018), health psychology (Shiffman & Stone, 1998), and adolescent development (Modecki, Goldberg, Ehrenreich, Russell, & Bellmore, 2019). These special issues highlight the strengths of AA methods: capturing dynamic psychological processes in everyday life, thus providing a different perspective than traditional laboratory and global/retrospective questionnaire methods. So, why the need for another special issue now on this topic in the *European Journal of Psychological Assessment*? The volume of AA research continues to rise,[2] and a growing number of studies focus

[1] We use the term *Ambulatory Assessment* to subsume both momentary self-reports (i.e., ESM/EMA/diary methods) and intensive sampling of behavior and physiology using mobile/wearable sensors in naturalistic settings, consistent with the definition of the *Society for Ambulatory Assessment* (SAA; http://ambulatory-assessment.org/).

[2] We conducted a Google Scholar search (on April 7, 2020) for publications with the terms "experience sampling," "ecological momentary assessment," "ambulatory assessment," or "daily diary" in their title and found a steadily increasing number in each year from 2010 ($n$ = 131) to 2019 ($n$ = 518). This is merely illustrative of a broader trend as many more publications use AA methods but do not include one of these terms in their title.



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specifically on the dynamics of emotion and emotion regulation in daily life (Brose et al., 2019; Colombo et al., 2020). This Special Issue aims to address measurement and modeling challenges that are particular to the study of emotional processes in everyday life. In what follows, we briefly outline some of the major challenges facing this field and outline how the eight contributions to this Special Issue help to address these challenges.

## Challenges for the Study of Emotion and Emotion Regulation Dynamics in Daily Life

### Measurement Challenges

The generation and regulation of emotion are theorized to be mutually interacting dynamic processes (Gross, 2015; Yih et al., 2019). Yet, most widely used measures of emotion (e.g., Watson & Walker, 1996) and emotion regulation (e.g., Gross & John, 2003) are global self-report questionnaires developed to assess stable dispositions rather than moment-to-moment dynamics. Dynamic measures of emotion have been developed for the lab (e.g., Coan & Gottman, 2007; Ruef & Levenson, 2007), but these are not practical for AA studies conducted across longer timescales in naturalistic settings. Thus, a major challenge for emotion researchers is to develop valid tools to measure people's momentary experience and regulation of emotions in daily life and to describe and interpret their dynamics. Four contributions to this Special Issue tackle such measurement-related issues.

First, Medland et al. report on the development and validation of a new scale assessing momentary use of emotion regulation strategies in daily life. The 12-item scale is designed to be sufficiently brief for AA research while also capturing a broad range of regulation strategies with two items per strategy. This represents an important advance on previous AA studies, which have either assessed emotion regulation strategies using single-item measures or focused on a very limited number of strategies (Colombo et al., 2020).

Second, Blanke et al. investigate whether momentary self-reports of emotion regulation obtained with AA can yield reliable indices of an individual's average use and dynamic variability in emotion regulation strategies across everyday contexts. By adapting Fleeson's (2001) density distribution approach, these authors provide a framework for characterizing relatively stable individual differences in patterns of momentary emotion regulation.

Third, English and Eldesouky address how to interpret dynamic variability in emotion regulation strategy use, which is often considered to index healthy or flexible emotion regulation (Aldao, Sheppes, & Gross, 2015). These authors highlight challenges in assessing situational features, which may have hampered attempts to document the theorized benefits of moment-to-moment variability in emotion regulation, and they suggest ways to improve the measurement of daily life contexts in future research.

Finally, MacCann et al., examine the predictive validity of global emotional intelligence measures for daily emotion dynamics, based on a meta-analysis and an original AA study. Their study systematically tests the hypothesized benefits of emotional intelligence for everyday emotional functioning, bringing a domain that is usually studied only at the trait level into a dynamic framework and bridging two previously separate literatures.

### Modeling Challenges

Understanding how people experience and regulate their emotions in daily life requires not only valid and reliable measurement tools, but also data analytic methods capable of capturing the complex dynamics and interplay among these processes. The other four contributions to this Special Issue develop or apply novel modeling approaches.

Van de Maat et al. highlight the importance of understanding and accounting for cyclical (e.g., diurnal) patterns in AA data on emotions. Although previous research has documented cyclical patterns in everyday emotions (e.g., Peeters, Berkhof, Delespaul, Rottenberg, & Nicolson, 2006), the detection of such cycles is often neglected in AA studies. Van de Maat et al. present an accessible overview of different methods for detecting and dealing with cycles in intensive sampling of emotion.

Another major challenge for researchers studying emotion dynamics concerns the identification of individual differences (Kuppens & Verduyn, 2017). To help address this challenge, Ernst et al. present a new modeling approach to induce latent classes of individuals with similar multivariate patterns of emotion dynamics, known as *latent class vector-autoregressive modeling*. This powerful analytic tool allows researchers to identify potentially novel emotional traits based on dynamic patterns in AA data, rather than relying solely on traditional (global/retrospective) self-report questionnaires as indicators of individual differences.

Ironically, while emotion dynamics is fundamentally about variability, most research in this area has (implicitly) assumed that parameters of emotion dynamics are themselves stable across contexts and time (but see, e.g., Dejonckheere et al., 2019; Koval & Kuppens, 2012). Albers and Bringmann provide researchers with a powerful tool for moving beyond this "stationarity" assumption by presenting a novel technique for identifying gradual and abrupt changes in emotion dynamics using *time-varying change-point autoregressive models*.

Finally, Bosley et al. apply a novel idiographic modeling approach to investigate reciprocal associations among positive affect and worry in daily life, testing the predictions of a prominent model of anxiety. Their findings demonstrate

 

that both the magnitude and direction of associations between positive affect and worry differ substantially across people. This implies that theoretical accounts of emotion and emotion regulation may need to account for substantial individual differences in the relations among these processes, highlighting the utility of idiographic modeling.

## Conclusion

Taken together, the eight contributions to this Special Issue address some of the major assessment and modeling challenges facing researchers studying the dynamics of everyday emotional processes. Of course, there are many other challenges facing our field. For instance, given that research on emotional functioning in daily life relies heavily on self-report, we must do more to understand and mitigate the influences of measurement reactivity (Shrout et al., 2018) and response styles (Baird, Lucas, & Donnellan, 2017) and more work is needed to validate non-self-report methods for assessing implicit experience and regulation of emotion in daily life (Sarsenbayeva et al., 2020). Nevertheless, we hope this Special Issue presents a step forward in tackling the complex measurement challenges posed by studying emotions and emotion regulation in everyday life.

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